

Preventing Voltage Regulator Latch-up on the A&D Board

Several students have experienced the loss of minus 9 volts, when performing lab exercises on the RSR/VT A&D Board. After testing several possible solutions, ECE Technical Support recommends adding transient suppression diodes.

There are a few references in older voltage regulator handbooks. Here are some online references:

- <http://www.national.com/an/AN/AN-103.pdf>
 - pages 10-12
- <http://www.fairchildsemi.com/ds/MC/MC7912.pdf>
 - page 15

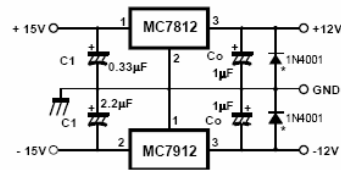
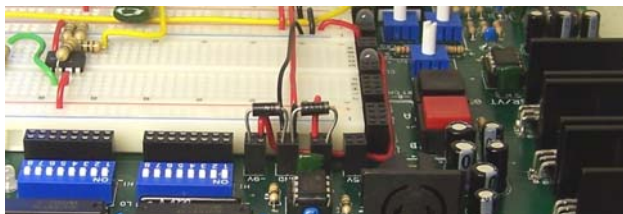
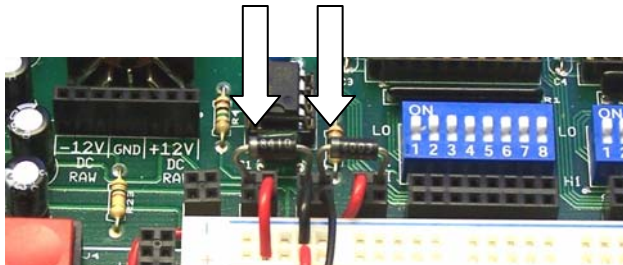


Figure 7. Split power supply (± 12V/1A)

Notes:

- (1) To specify an output voltage, substitute voltage value for "XX "
- (2) Required for stability. For value given, capacitor must be solid tantalum. If aluminium electronics are used, at least ten times value shown should be selected. C1 is required if regulator is located an appreciable distance from power supply filter.
- (3) To improve transient response. If large capacitors are used, a high current diode from input to output (1N4001 or similar) should be introduced to protect the device from momentary input short circuit.

We recommend that students add 2 diodes to the power supply socket headers, as shown in the following pictures. Please note the stripe on the diode, which designates the cathode. The stripes on both diodes should face away from the DIP Switch.



Students may obtain free 1N4003 diodes in 368 Durham, during normal CEL open hours.

Thanks to Rick Cooper for saving the old manuals and finding the original reference.

{Revision 1.0, by Bob Lineberry, 3 November 2005}